

Lake County Airport – KLKV Airport Master Plan **Planning Advisory Committee Meeting #1**

Existing Conditions
and
Aviation Activity Forecasts

Agenda

- Introductions: Project Team and PAC
- Why Plan?
- Public Involvement Process
- Framework of the Plan
- Master Plan Schedule
- Existing Conditions Analysis
 - Regional Setting
 - Landside Elements
 - Airside Elements
 - Airport Administration
- Aviation Activity Forecasts
- Next Steps



Project Planning Team

- Lake County
 - Tristan Witham
 - Dave Berman
- Century West Engineering
 - Mike Dane
 - Mark Hagerdorn
 - Samantha Peterson

PAC Roles and Responsibilities

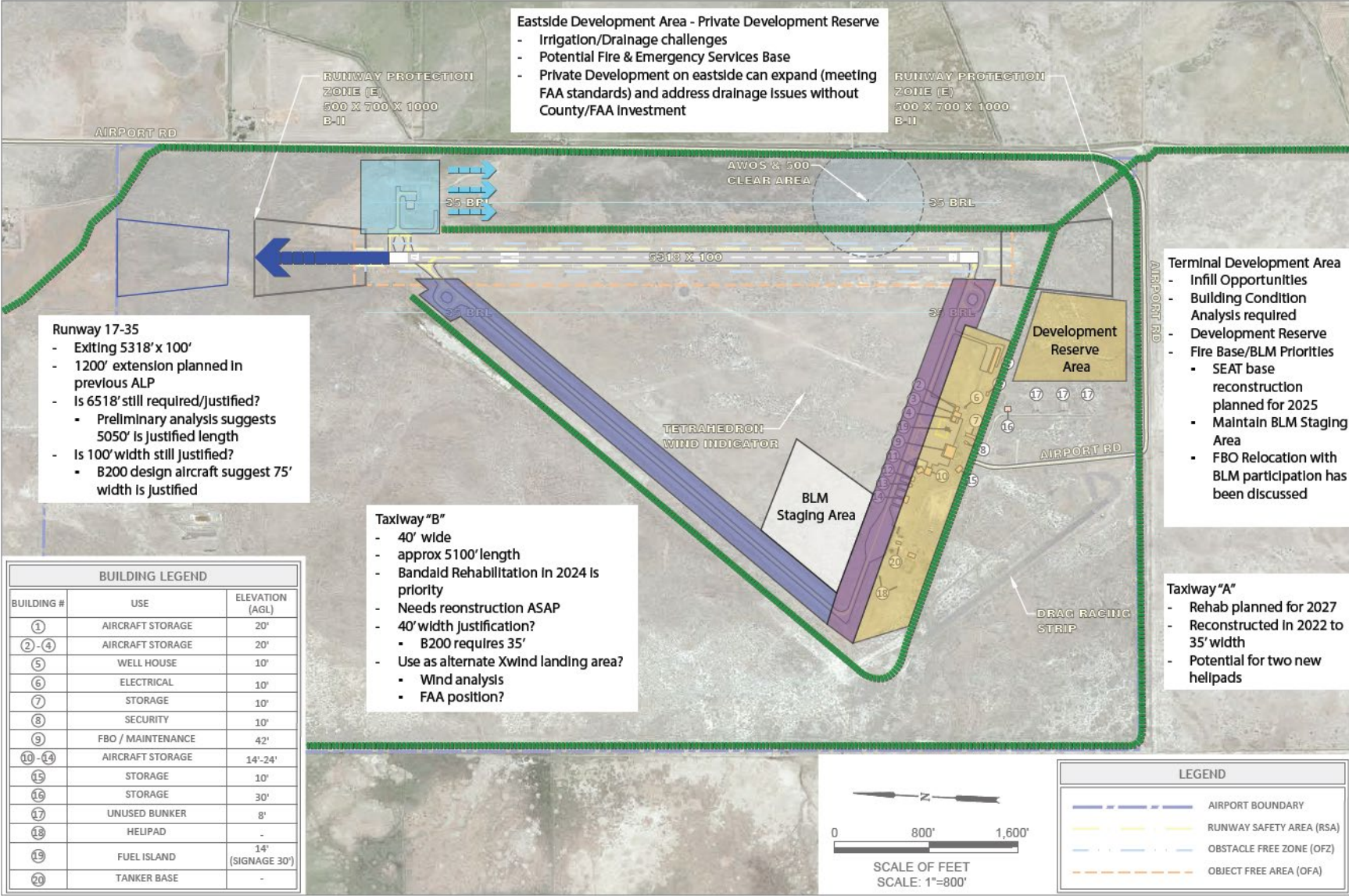
- Listen and respect all viewpoints
- Seek input from peer groups
- Provide comment/feedback on:
 - Chapters
 - PAC meetings
- Advisory non-voting committee

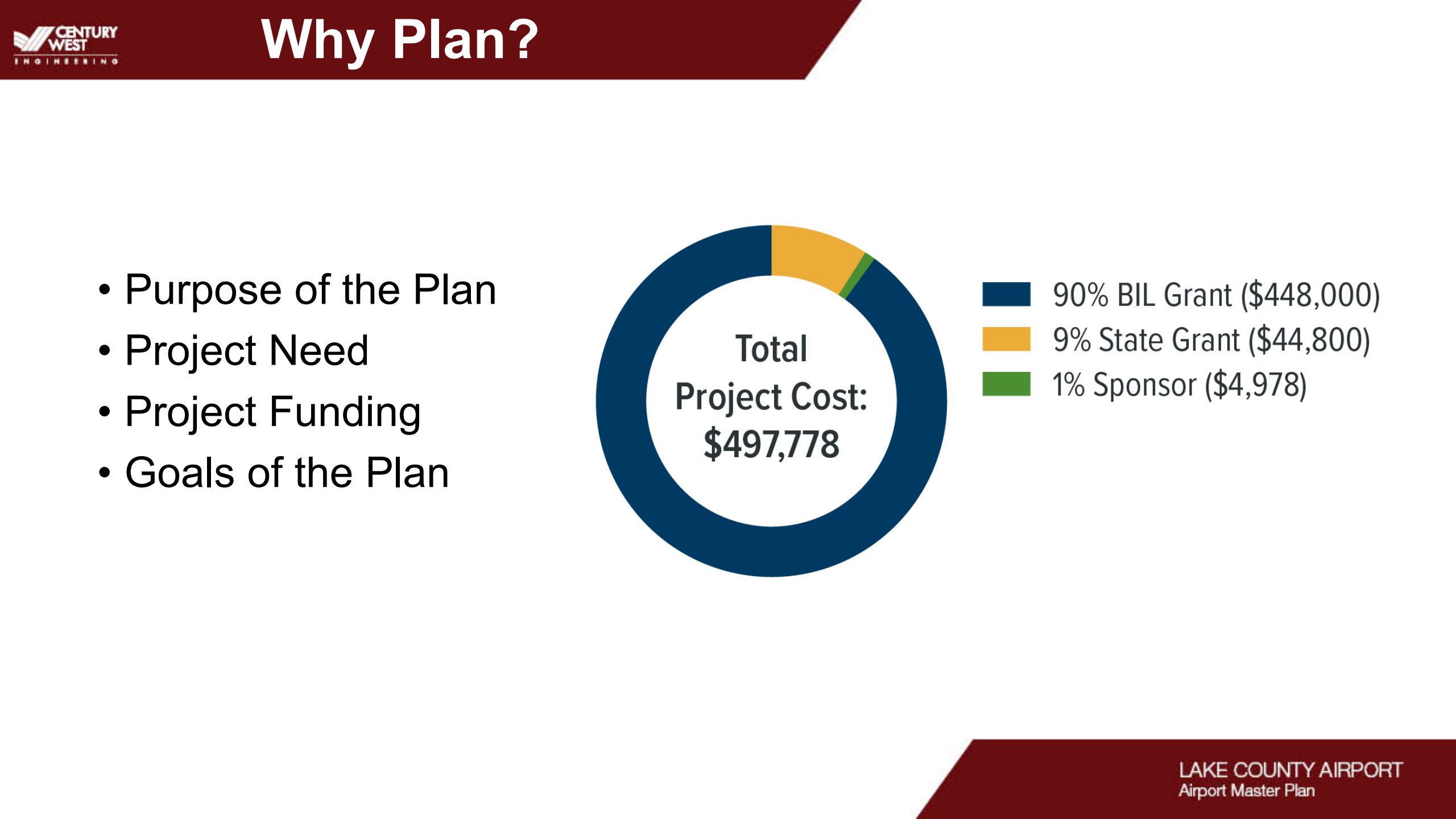
Planning Advisory Committee (PAC)

- Tristan Witham, Airport Manager
- Dave Berman, Lake County
- Greg McCully, Airport Neighbor
- Randy Alves, Airport User
- Mark Albertson Local Representative
- Eric Wolf, BLM
- Tim House, FAA SEA-ADO
- Brandon Pike, ODAV



- Purpose of the Plan
- Project Need
- Project Funding
- Goals of the Plan





Why Plan?

- Purpose of the Plan
- Project Need
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Why Plan?

- Purpose of the Plan
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- 1 Define the vision for the Airport to effectively serve the community, airport users, and the region. Assess known issue including, runway length, ability to accommodate development, auto parking, fencing, and land use to develop a realistic sustainable plan to improve the airport.
- 2 Document existing activity, condition of airfield facilities, and policies that impact airport operations and development opportunities.
- 3 Forecast future activity based on accepted methodology.
- 4 Evaluate facilities and conformance with applicable local, state, and FAA standards.
- 5 Identify facility improvements to address conformance issues and accommodate demand.
- 6 Identify potential environmental and land use requirements that may impact development.
- 7 Explore alternatives to address facility needs. Work collaboratively with all stakeholders to develop workable solutions to address needs.
- 8 Develop an Airport Layout Plan to graphically depict proposed improvements consistent with FAA standards as a road map to future development. Prepare a supporting Capital Improvement Plan to summarize costs and priorities.
- 9 Provide recommendations to improve land use, zoning, and City oversight of the airport to remove barriers to appropriate growth at the Airport.
- 10 Summarize the collective vision and plan for the airport in the Airport Master Plan report.

Public Involvement



PAC Meeting #1

The Consultant will review the goals and objectives of an AMP Report, and present the existing conditions of the Airport, community, and aviation industry; as well as the preliminary aviation activity forecasts that have been submitted to FAA for review and approval following local review.

PAC Meeting #2 / Public Open House

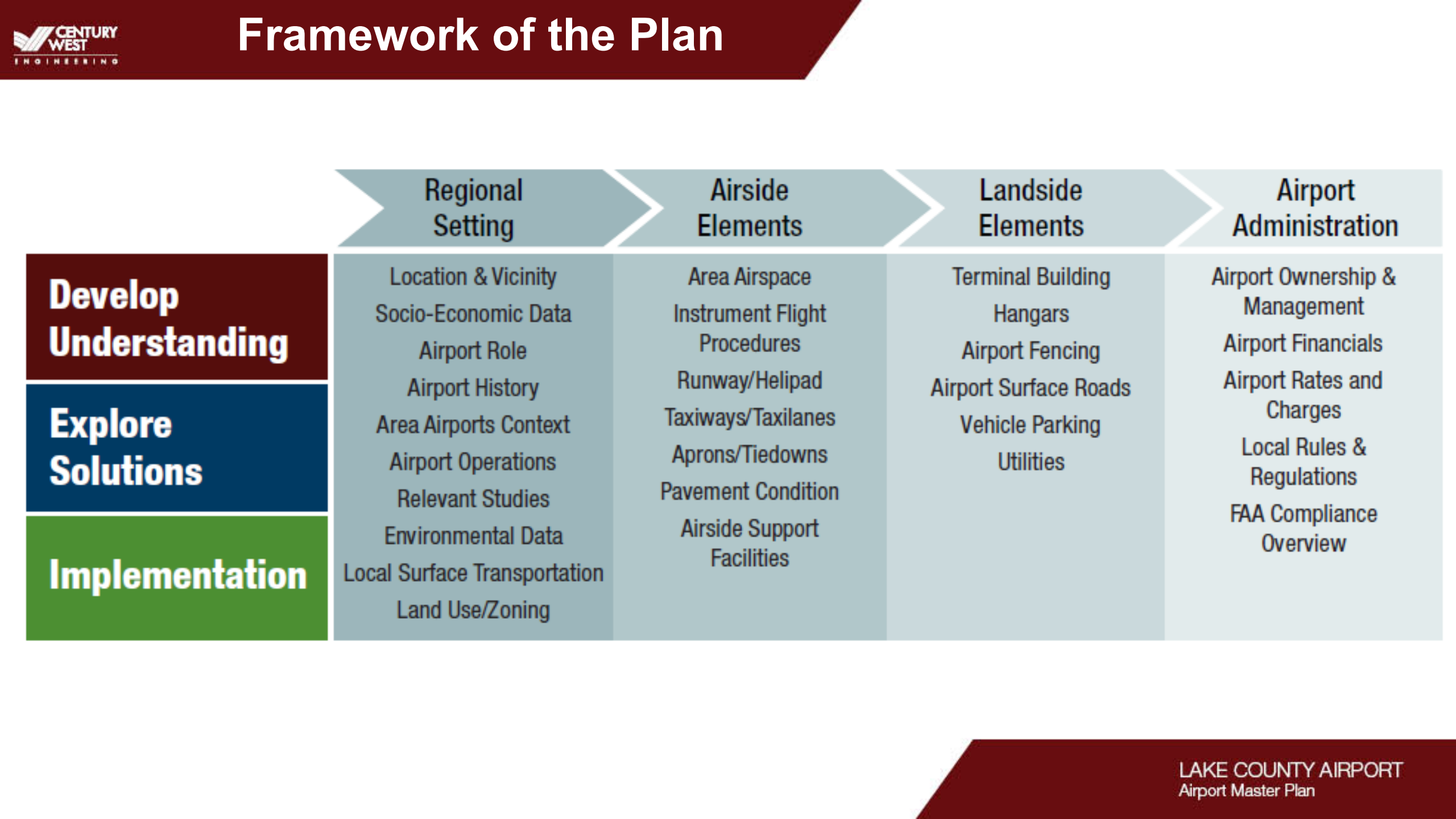
PAC Meeting #2 is an interactive discussion with the PAC that focuses on the Airport's facility needs required to satisfy FAA standards, future growth, as well as the vision of the County and its users. The Consultant will present a series of preliminary alternative concepts capable of satisfying future demand and address any non-standard conditions to seek input from the PAC and public.

PAC Meeting #3

The input provided in PAC #2 and Public Open House is used to refine the proposed development alternatives, and based on technical evaluations, public input and coordination with the County, a recommended preferred alternative will be presented to the PAC. All alternatives considered in this process will be consistent with all applicable FAA technical standards and regulations.

PAC Meeting #4 / Public Open House

The Consultant will present an implementation program with recommended strategies and actions for future land use, transportation, and environmental requirements; a realistic and workable CIP; and AMP drawings that graphically depicted existing conditions at the Airport.



Framework of the Plan

**Develop
Understanding**

**Explore
Solutions**

Implementation

Regional
Setting

Airside
Elements

Landside
Elements

Airport
Administration

Location & Vicinity
Socio-Economic Data
Airport Role
Airport History
Area Airports Context
Airport Operations
Relevant Studies
Environmental Data
Local Surface Transportation
Land Use/Zoning

Area Airspace
Instrument Flight
Procedures
Runway/Helipad
Taxiways/Taxilanes
Aprons/Tiedowns
Pavement Condition
Airside Support
Facilities

Terminal Building
Hangars
Airport Fencing
Airport Surface Roads
Vehicle Parking
Utilities

Airport Ownership &
Management
Airport Financials
Airport Rates and
Charges
Local Rules &
Regulations
FAA Compliance
Overview

Project Schedule

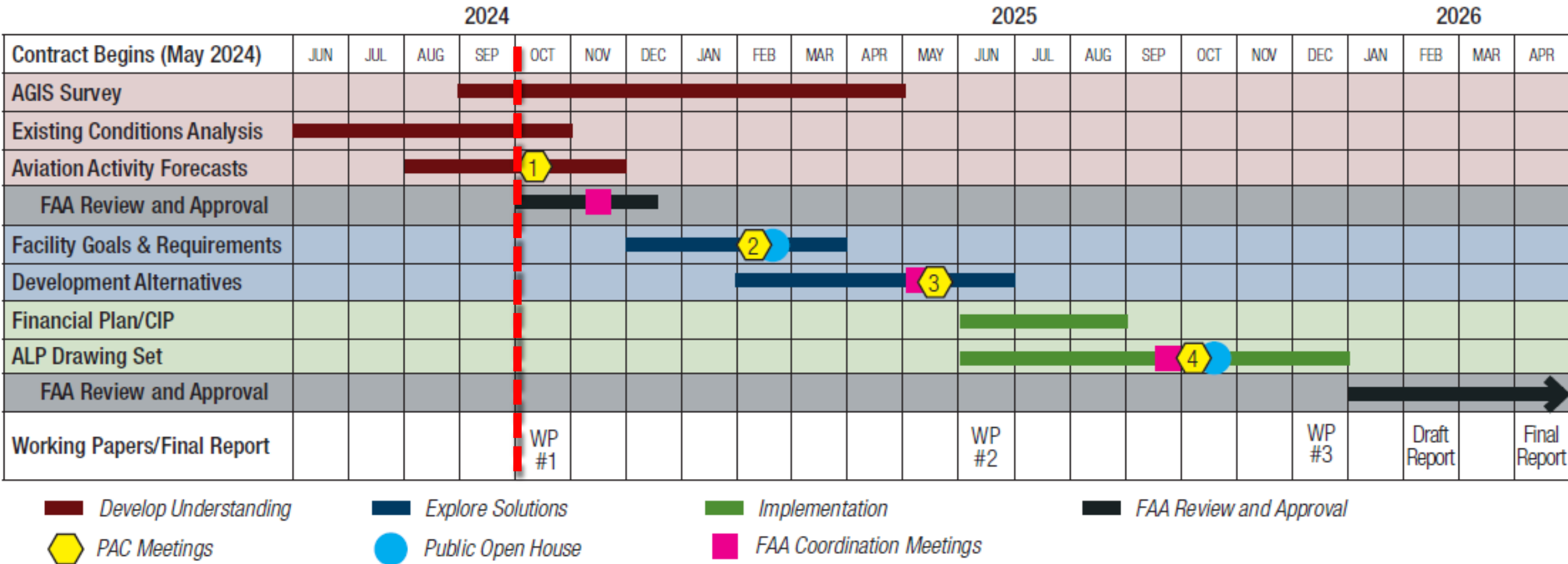


Table 2-1: Historical Population

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	AAGR
State of Oregon	3,962,710	4,018,542	4,093,271	4,147,294	4,183,538	4,216,116	4,245,044	4,256,465	4,239,279	4,233,358	
AAGR		1.41%	1.86%	1.32%	0.87%	0.78%	0.69%	0.27%	-0.40%	-0.14%	0.74%
Lake County	7,854	7,842	7,799	7,807	7,843	7,837	7,896	8,119	8,201	8,562	
AAGR		-0.15%	-0.55%	0.10%	0.46%	-0.08%	0.75%	2.82%	1.01%	4.40%	0.96%
Klamath County	65.333	65.742	66.287	66.853	67.81	68.343	69.553	70.246	70.19	70.003	
AAGR		0.63%	0.83%	0.85%	1.43%	0.79%	1.77%	1.00%	-0.08%	-0.27%	0.77%
Harney County	7,253	7,229	7,214	7,195	7,228	7,267	7,310	7,454	7,496	7,600	
AAGR		-0.33%	-0.21%	-0.26%	0.46%	0.54%	0.59%	1.97%	0.56%	1.39%	0.52%

Source: Federal Reserve Bank of St. Louis; Portland State University 2023 Annual Oregon Population Report Tables (2023)

Table 2-2: Historical Gross Regional Product

	2017	2018	2019	2020	2021	2022	2023	AAGR
Oregon (mil)	\$225,535	\$238,467	\$248,940	\$251,856	\$275,444	\$297,309	\$316,461	
AAGR		5.73%	4.39%	1.17%	9.37%	7.94%	6.44%	5.81%
Lake County	\$256,293	\$301,524	\$327,384	\$325,828	\$365,433	\$415,317		
AAGR		17.65%	8.58%	-0.48%	12.16%	13.65%		8.38%
Klamath County	\$2,285,268	\$2,404,552	\$2,505,499	\$2,552,379	\$2,886,415	\$3,113,838		
AAGR		5.22%	4.20%	1.87%	13.09%	7.88%		5.29%
Harney County	\$245,012	\$264,419	\$281,014	\$293,737	\$364,854	\$411,778		
AAGR		7.92%	6.28%	4.53%	24.21%	12.86%		9.04%

Source: Federal Reserve Bank of St. Louis; Portland State University 2023 Annual Oregon Population Report Tables (2023)

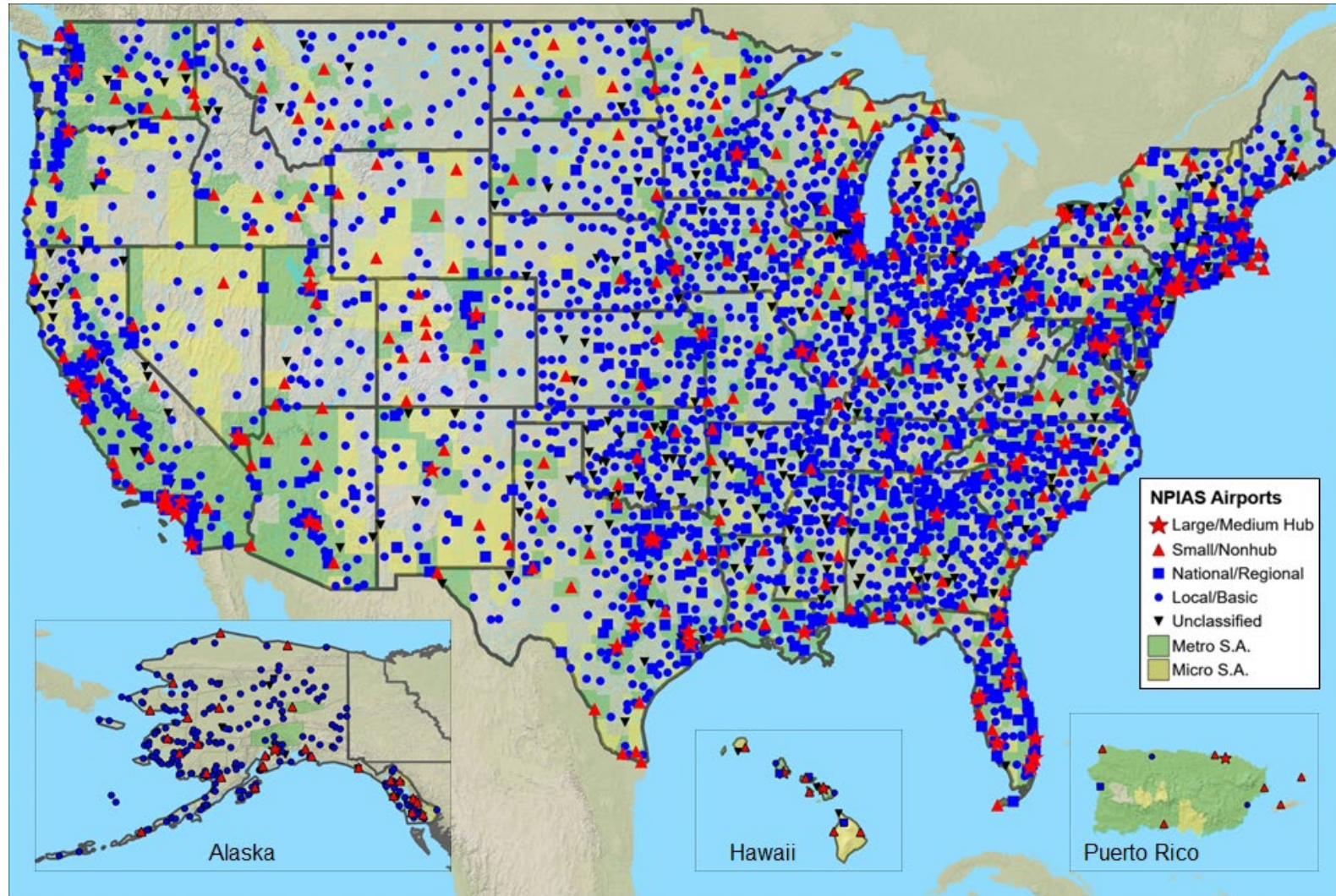
Table 2-3: Historical Per Capita Income

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	AAGR
Oregon	\$41,653	\$44,166	\$45,467	\$47,565	\$50,209	\$52,178	\$56,504	\$61,643	\$62,314	\$65,426	
AAGR		6.03%	2.95%	4.61%	5.56%	3.92%	8.29%	9.09%	1.09%	4.99%	5.15%
Lake County	\$35,895	\$36,957	\$38,425	\$36,932	\$39,449	\$40,815	\$43,592	\$47,456	\$46,728		
AAGR		2.96%	3.97%	-3.89%	6.82%	3.46%	6.80%	8.86%	-1.53%		2.97%
Klamath County	\$33,443	\$35,129	\$36,439	\$37,789	\$39,257	\$39,924	\$43,406	\$47,364	\$47,244		
AAGR		5.04%	3.73%	3.70%	3.88%	1.70%	8.72%	9.12%	-0.25%		4.41%
Harney County	\$34,856	\$36,768	\$37,075	\$35,870	\$38,344	\$40,621	\$44,506	\$49,214	\$50,016		
AAGR		5.49%	0.83%	-3.25%	6.90%	5.94%	9.56%	10.58%	1.63%		4.62%

Source: Federal Reserve Bank of St. Louis

Airport Role

- National Role
 - NPIAS Airport
 - Local GA – Connect communities to national airport system and support GA activities
- State Role
 - Category III: Regional General Aviation Airport.
 - Supports twin and single engine aircraft, and occasional business jets.
- Local Role
 - What does it mean to you?



Airport History

- 1985 – Runway Rehabilitation/Taxiway Rehabilitation/Airport Drainage Improvements
- 1992 – Runway Construction
- 2005 – Fuel Farm Improvements
- 2006 – Runway Rehabilitation/Apron Rehabilitation
- 2007 – Apron Rehabilitation
- 2011 – Airport Master Plan Update
- 2015 – PAPI/NAVAIDS Installation and Runway Rehabilitation
- 2017 – Install Airport Beacon/Reconstruct Apron
- 2021 – Reconstruct Taxiway
- 2024 – Taxiway Sealcoat
- 2024 – Airport Master Plan Update

Federal Entitlement = \$9.15 million

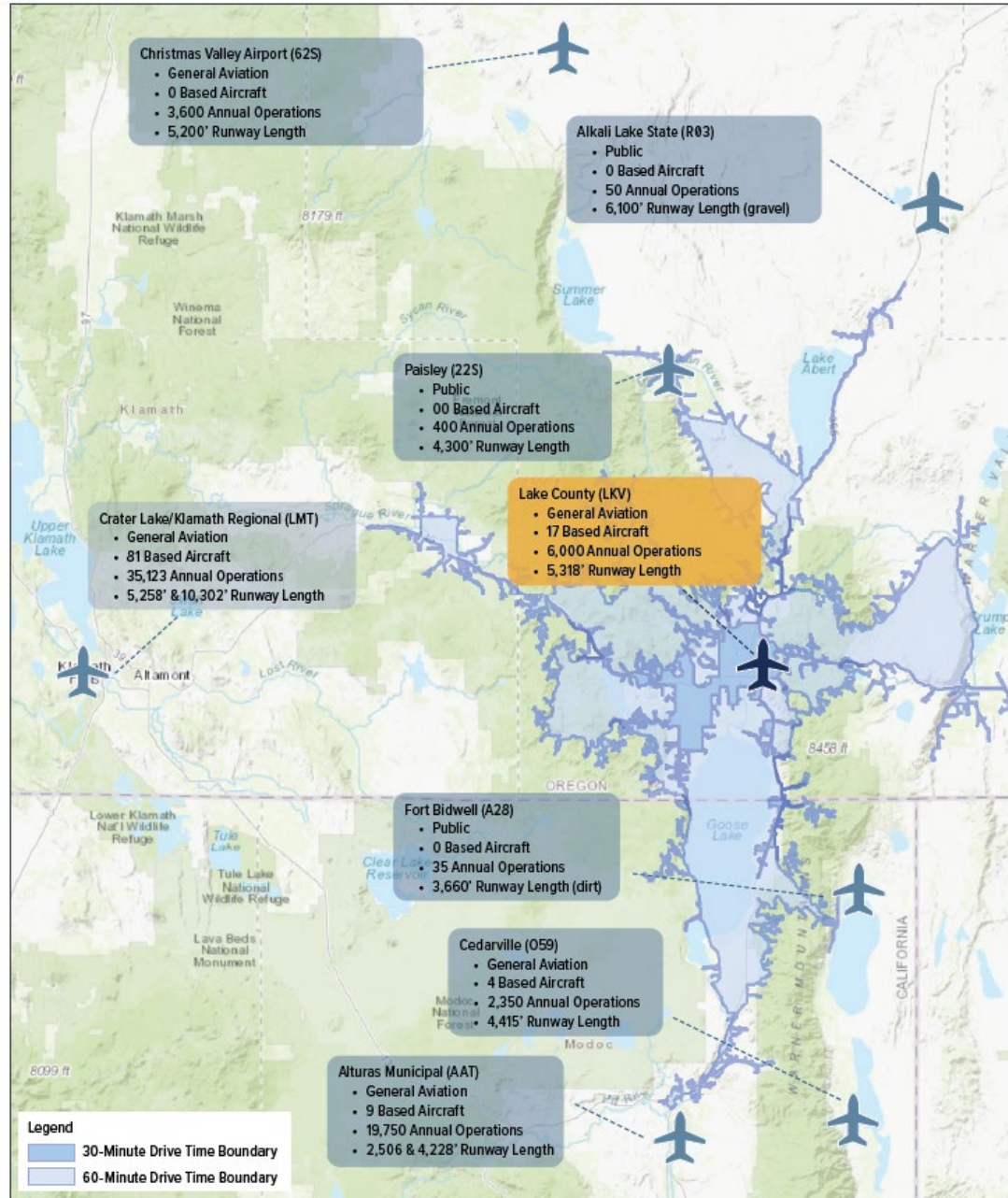
Federal Discretionary = \$1.14 million

COVID = \$443,713

BIL = \$448,000

Total Federal = \$11.18 million

Area Airports Context



Based Aircraft and Aircraft Operations

Lake County Airport FAA TAF Operations Data		Updated Operations Data
Air Carrier	-	-
Air Taxi	1,212	1,500
GA Local	1,517	1,500
GA Itinerant	3,340	3,100
Military	-	100
TOTAL OPERATIONS	6,069	6,200
TOTAL BASED AIRCRAFT	17	14
Single Engine	N/A	12
Multi Engine		2
Jet		
Helicopters		
Glider		
Military		
Ultra-Light		

Aircraft Type	2024
Single Engine Piston ¹	4,400
Multi Engine Piston	350
Turbo Prop	950
Jet	100
Helicopters	400
Total Operations	6,200
1. Includes LSA and Experimental AC	

Aircraft Operations

DESIGN AIRCRAFT AND AIRPORT REFERENCE CODE (ARC)

The design aircraft represents the most demanding aircraft using the airport on a regular basis and determines the appropriate airport reference code (ARC) and airport design standards for airport development.

AIRPORT REFERENCE CODE (ARC)

Aircraft Approach Category	Aircraft Approach Speed	Airplane Design Group	Aircraft Wingspan
A	less than or equal to 91	I	less than or equal to 49'
B	92 to 121	II	50' to 79'
C	122 to 141	III	80' to 118'

A-I
12,500 lbs. or less



Beech Baron 55
Beech Bonanza
Cessna 182
Piper Archer

B-I (small)
12,500 lbs. or less



Beech Baron 58
Beech King Air C90
Cessna 402
Cessna 421

A-II, B-II (small)
12,500 lbs. or less



Super King Air 200
Pilatus PC-12
DCH Twin Otter
Cessna Caravan

B-II
Greater than 12,500 lbs.



Super King Air 300, 350
Beech 1900
Cessna Citation
Falcon 20, 50

A-III, B-III
Greater than 12,500 lbs.



DHC Dash 7, Dash 8
Q-200, Q-300
DC-3
Convair 580

C-I, D-I



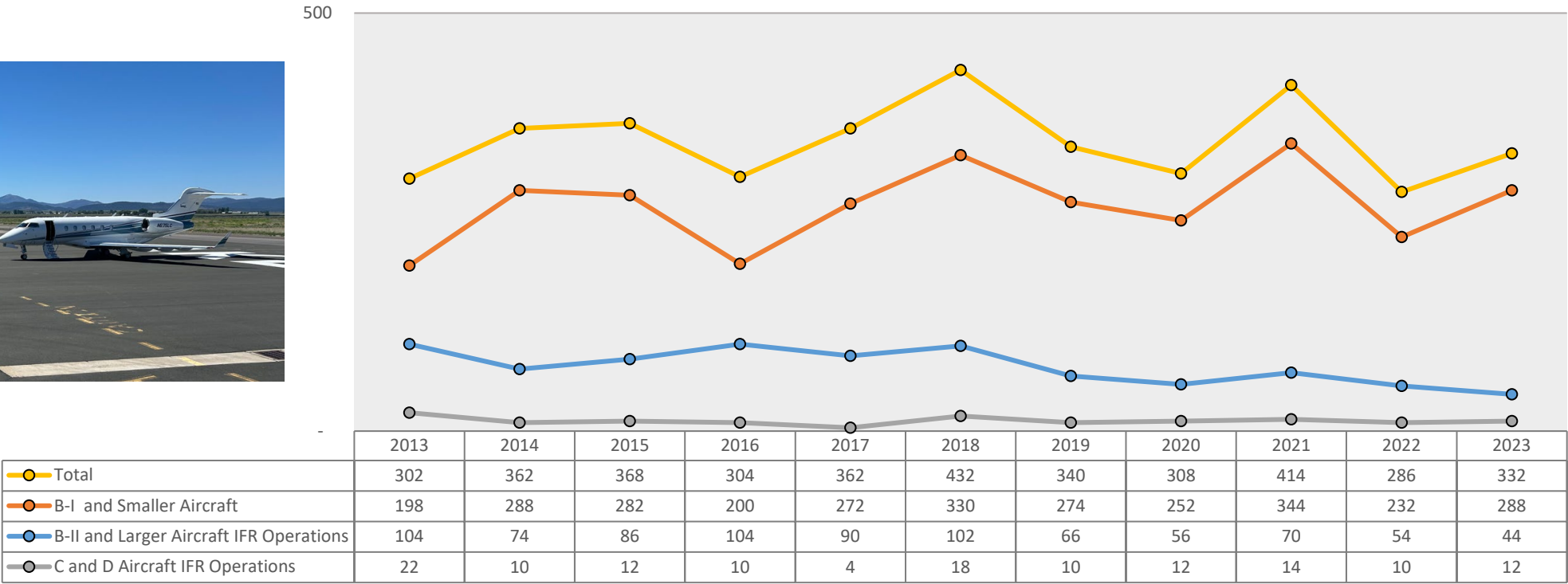
Lear 25, 35, 55, 60
Israeli Westwind
HS 125-700



Aircraft Operations



TFMSC IFR Operations Data



Existing Design Aircraft

DESIGN AIRCRAFT AND AIRPORT REFERENCE CODE (ARC)

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Beech Baron 55
Beech Bonanza
Cessna 182
Piper Archer

B-I (small)
12,500 lbs. or less



Beech Baron 58
Beech King Air C90
Cessna 402
Cessna 421

A-II, B-II (small)
12,500 lbs. or less



Super King Air 200
Pilatus PC-12
DCH Twin Otter
Cessna Caravan

B-II
Greater than 12,500 lbs.



Super King Air 300, 350
Beech 1900
AT 802
Falcon 20, 50

A-III, B-III
Greater than 12,500 lbs.



DHC Dash 7, Dash 8
Q-200, Q-300
DC-3
Convair 580

C-I, D-I



Lear 25, 35, 55, 60
Israeli Westwind
HS 125-700

B-II
Greater than 12,500 lbs.



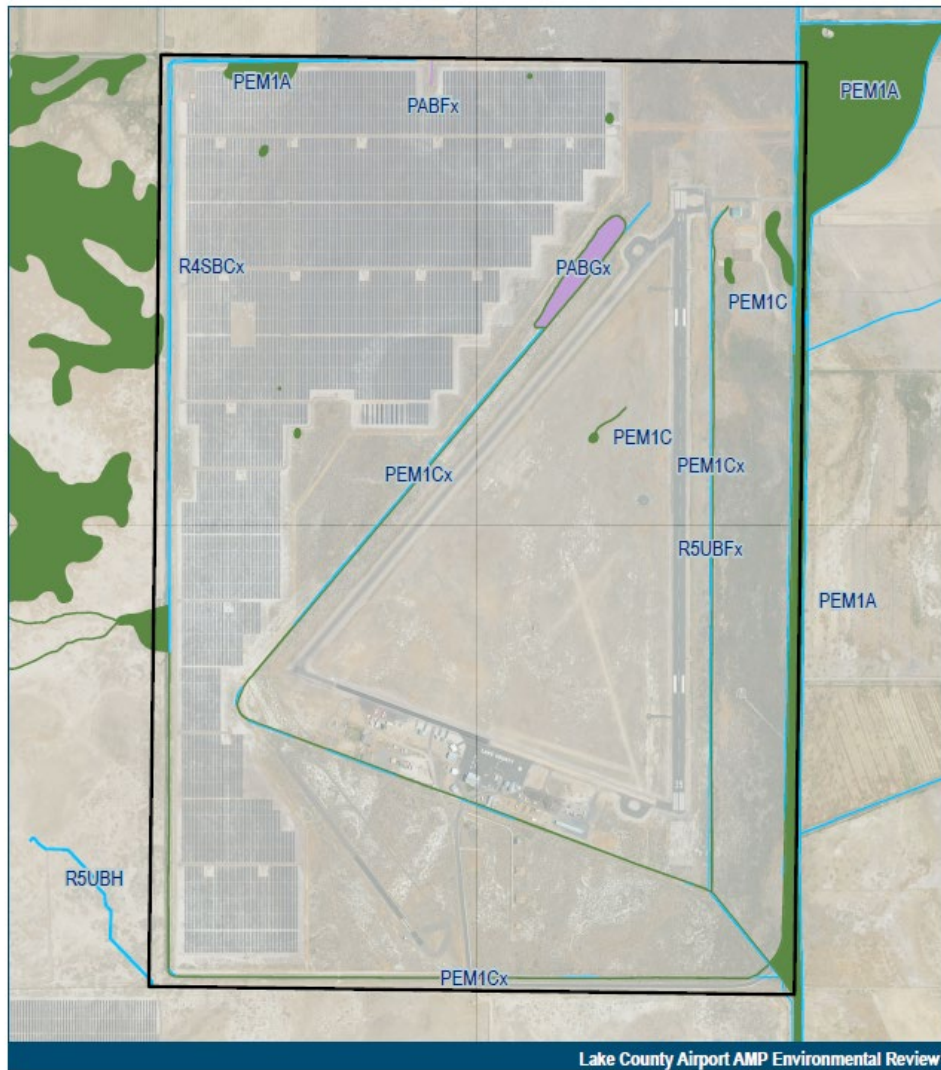
Super King Air 300, 350
Beech 1900
AT 802
Falcon 20, 50

BLM Staff Report average of 436 ops/year
Some years well over 500+ ops

Environmental Screening

- Per FAA Order 1050.1F and 5050.4B and the AMP scope of work
- 5 Environmental Impact Categories were analyzed
 - Air Quality
 - Biological Resources (Fish, Wildlife, and Plants)
 - Department of Transportation Act, Section 4(f)
 - Hazardous Materials, Solid Waste, and Pollution Prevention
 - Water Resources (includes Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Environmental Screening



Study Area
 Freshwater Pond (PABFx, PABGx)
 Freshwater Emergent Wetland (PEM1A, PEM1C, PEM1Cx)
 Riverine (R4SBCx, R5UBFx, R5UBH)

Figure 1
National Wetlands Inventory

0 0.25 0.5
 Miles

8/27/2024



Wetlands

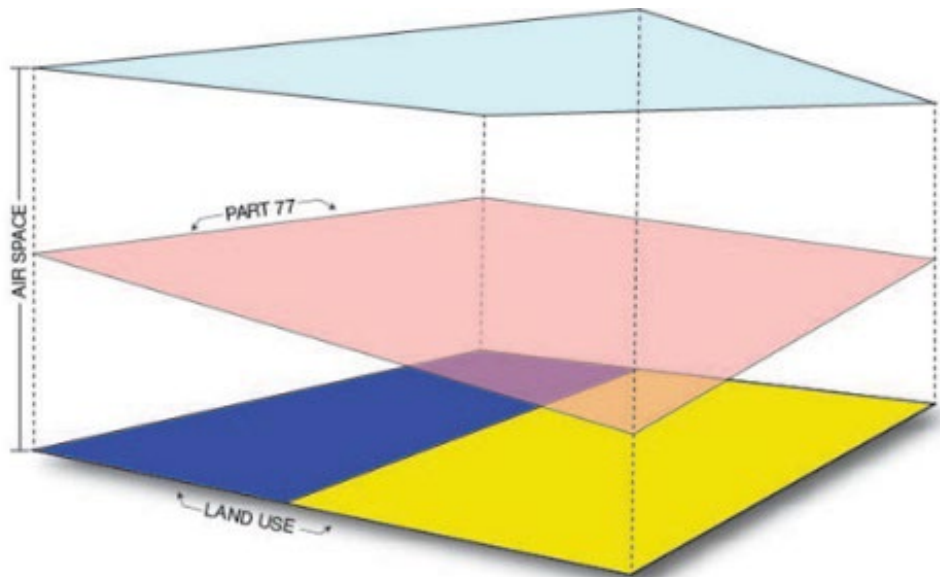
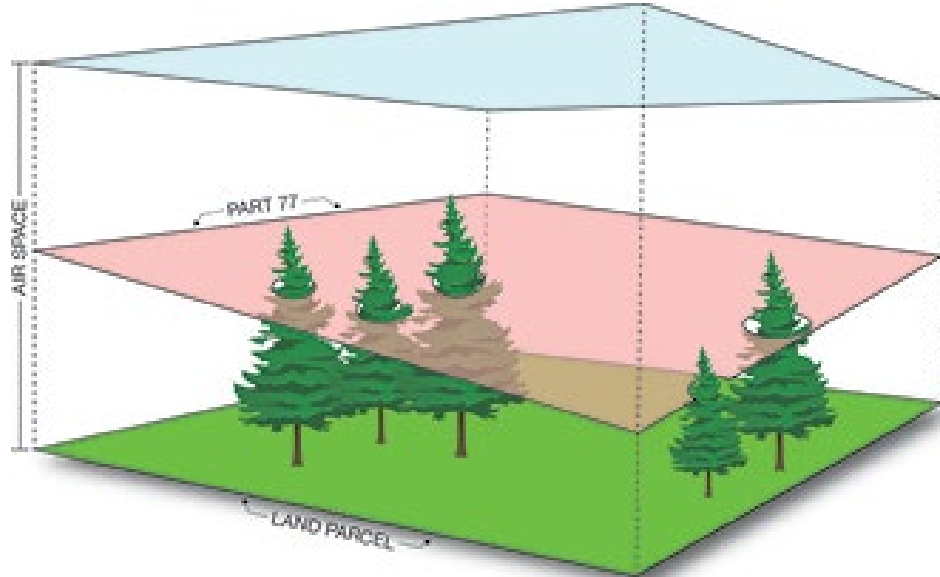
- The National Wetland Inventory shows numerous small wetlands on the Airport property, including one in the northern portion of the infield and wetlands in the surrounding canals
- A site visit by a qualified wetland scientist is needed to determine whether wetland conditions are present.
- Due to the flat and arid nature of the landscape and mapped hydric soils at the site it is important that the site visit occurs during the early growing season when the water table is expected to be present.



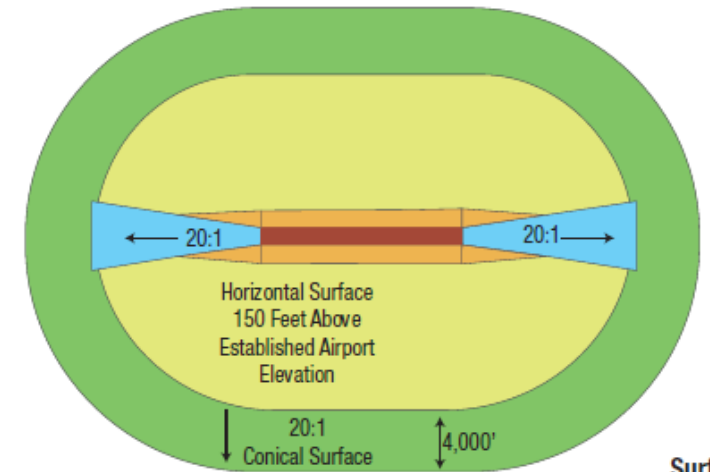
Airports & Land Use

- Comprehensive Plan Designation
 - P – Public Facilities
- Base Zone
 - A-1 – Exclusive Farm Use Zone
- Airspace Overlay Zone
 - A-A – Airport Approach Combining Zone



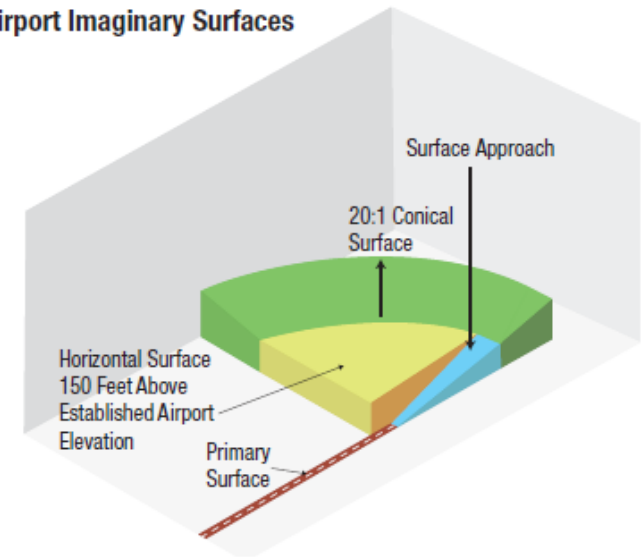


Plan View of Part 77
Civil Airport Imaginary Surfaces

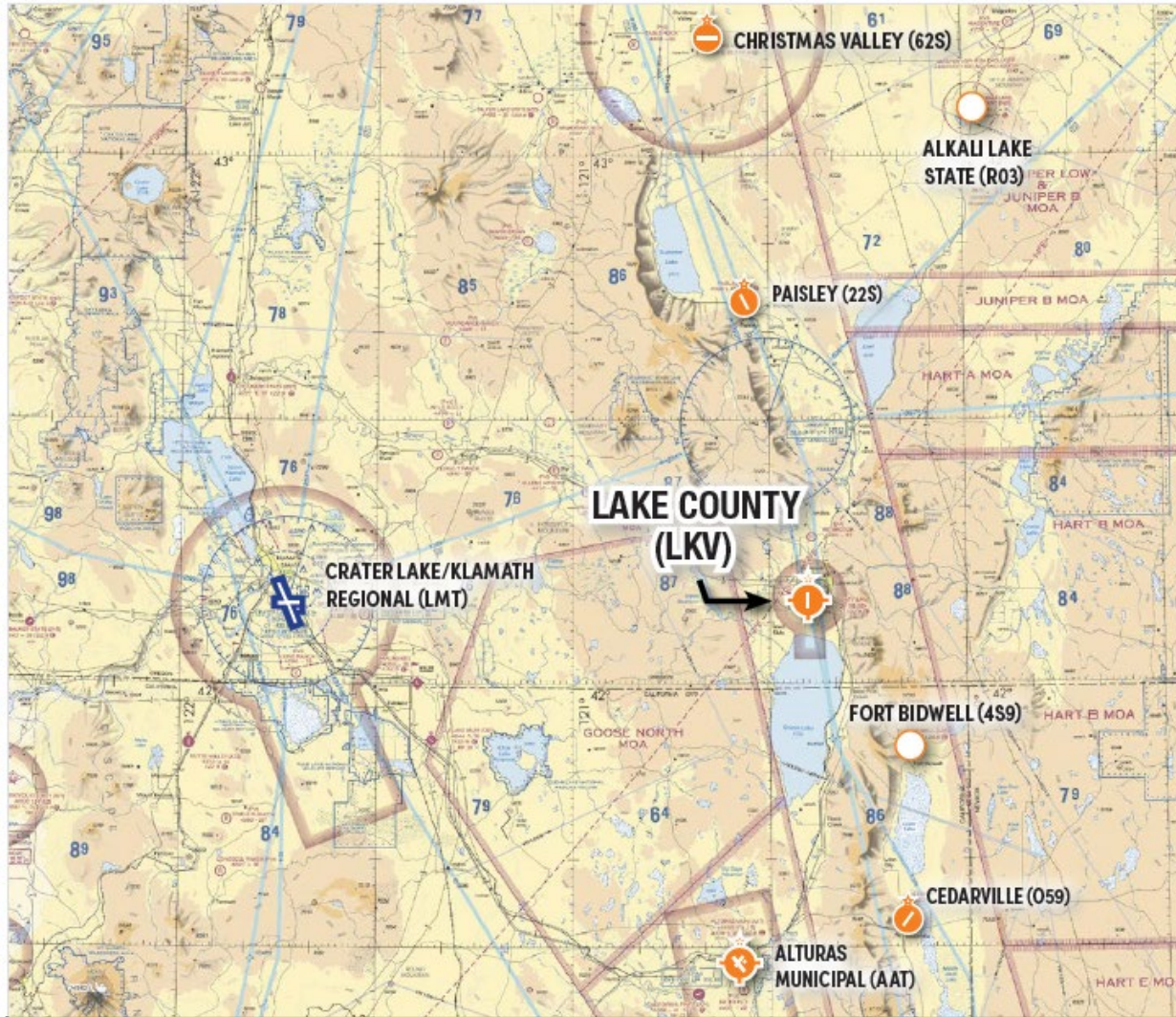


- Surface Slope Key**
- Primary Surface
 - Transitional Surface
 - Horizontal Surface
 - Conical Surface
 - Approach Surface

Isometric View of Part 77
Civil Airport Imaginary Surfaces



Area Airspace



LEGEND

	Airports with other than hard-surface runways		Compass Rose (VOR/DME or VORTAC)
	Airports with hard-surfaced runways 1,500 ft. to 8,069 ft.		Enroute Airways
	Airports with hard-surfaced runways greater than 8,069 ft. or some multiple runways less than 8069 ft.		Alert Area and Military Operations Area (MOA)
	National Wilderness Area		Class E Airspace with floor 700 ft. above surface

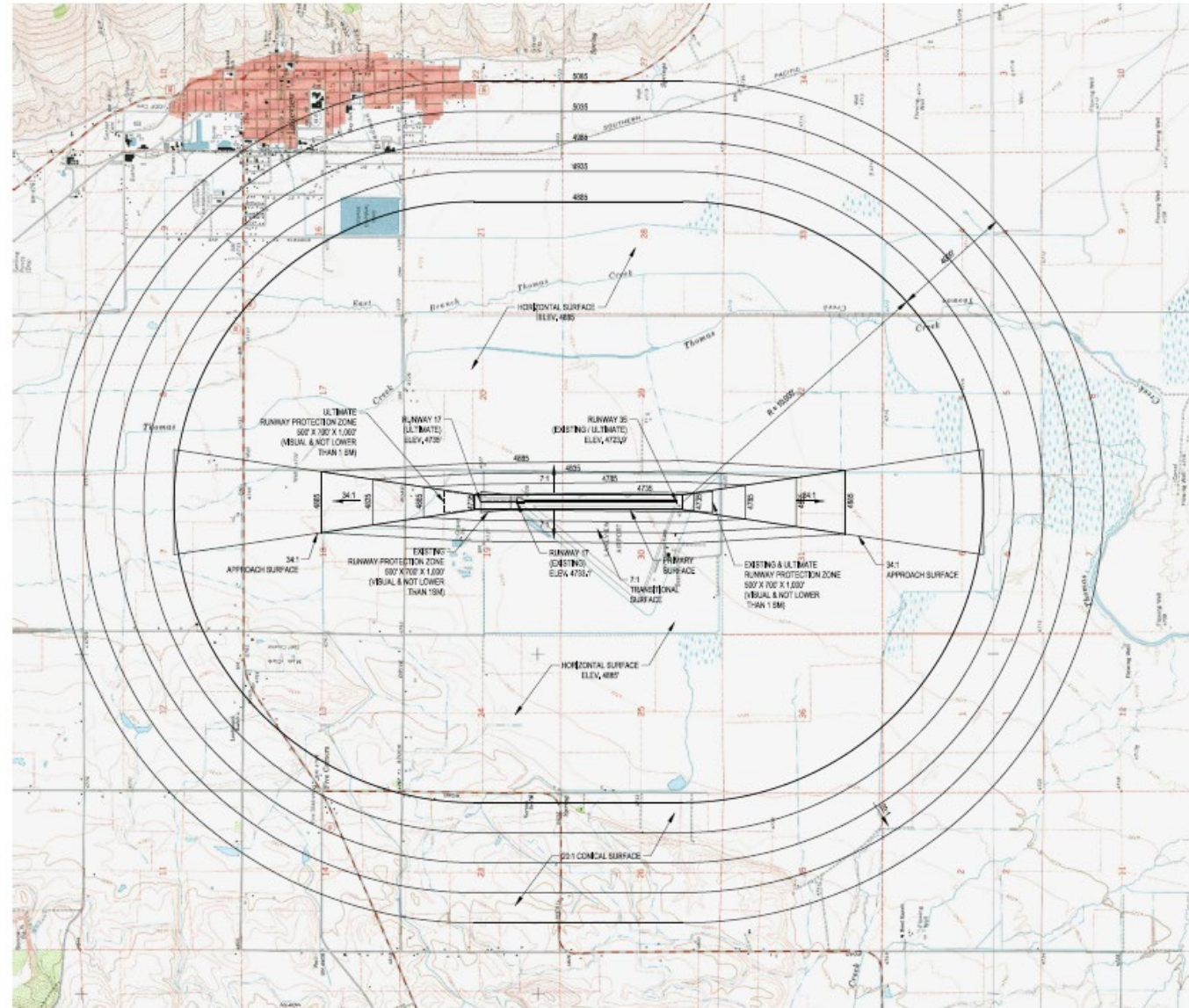
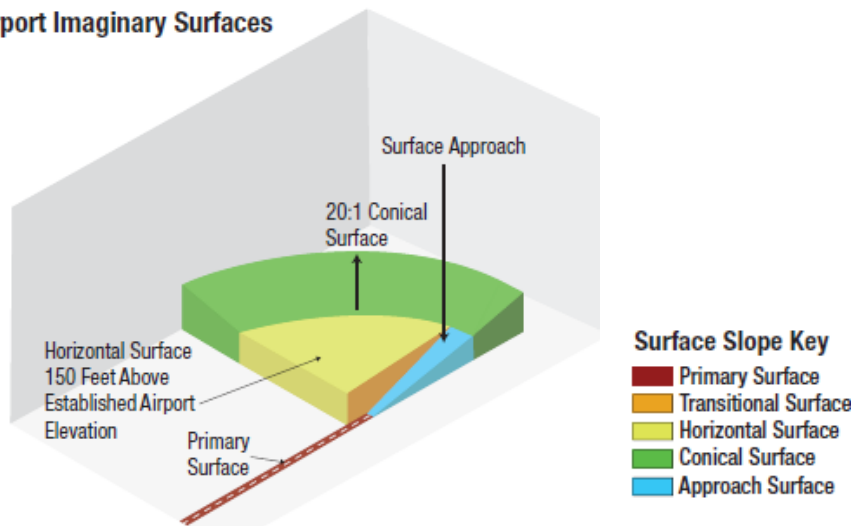
Source: SkyVector.com

- Airspace
 - LKV in Class G
 - Class E at 700' AGL
 - Lakeview VORTAC
 - CTAF 122.8
- Traffic Patterns
 - LH RWY 17
 - LH RWY 35
 - TPA 5,700' MSL

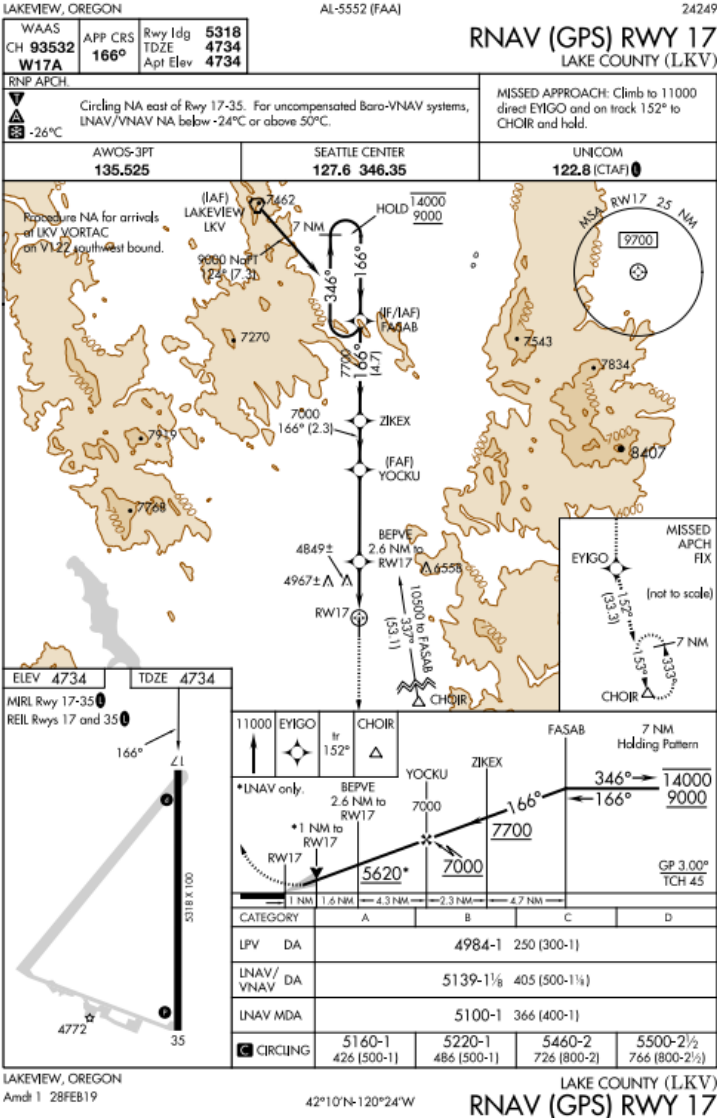
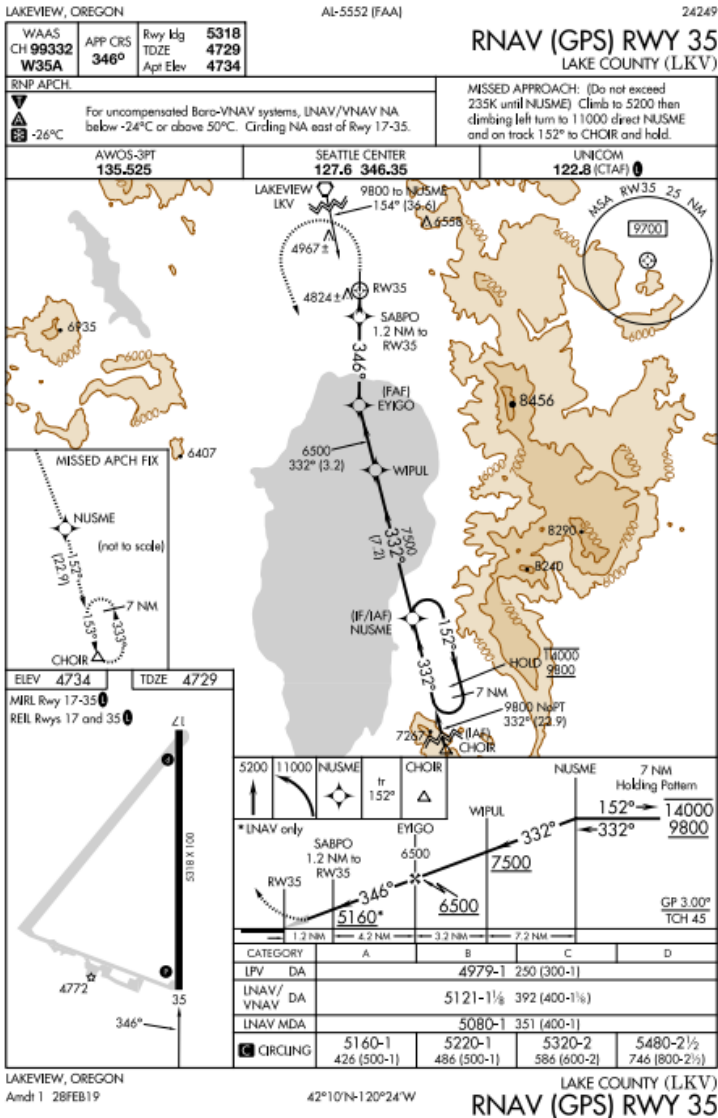
Area Airspace

- Part 77 Surfaces
- Overlay Zoning
- Approach Surfaces
- Obstructions
- IAP Development
- Avigation Easements

Isometric View of Part 77
Civil Airport Imaginary Surfaces



Approach Procedures



Approach Procedures

Table 3-4. Standards for Instrument Approach Procedures

Visibility Minimums ¹	< 3/4 statute mile	3/4 to < 1 statute mile	≥ 1 statute mile straight-in	Circling ²
HATh ³	< 250 ft	≥ 250 ft	≥ 250 ft	≥ 350 ft
TERPS GQS ⁴	Clear	Clear	Clear	Not applicable
PA final approach surfaces ⁵	Clear	Not Required	Not Required	Not applicable
POFZ (PA & APV only)	Required	Not Required	Not Required	Not applicable
TERPS Chapter 3, Section 3	34:1 clear	20:1 clear	20:1 clear ⁶	20:1 clear ⁶
ALP ⁷	Required	Required	Required	Recommended
Minimum Runway Length	4,200 ft (paved)	3,200 ft ^{8,9}	3,200 ft ^{8,9}	3,200 ft ^{8,9}
Runway Markings (See AC 150/5340-1)	Precision	Non-precision ⁹	Non-precision ⁹	Visual (Basic) ⁹
Holding Position Signs & Markings (See AC 150/5340-1, AC 150/5340-18)	Precision	Non-precision ⁹	Non-precision ⁹	Visual (Basic) ⁹
Runway Edge Lights ¹⁰	HIRL / MIRL	HIRL / MIRL	MIRL / LIRL	MIRL / LIRL (Required only for night minimums)
Parallel Taxiway ¹¹	Required	Required	Recommended	Recommended
Approach Lights ¹²	MALSR, SSALR, or ALSF	Recommended ¹³	Recommended ¹³	Not Required
Applicable Runway Design Standards, e.g. OFZ	< 3/4-statute mile approach visibility minimums	≥ 3/4-statute mile approach visibility minimums	≥ 3/4-statute mile approach visibility minimums	Not Required
Threshold Siting Criteria To Be Met (Reference paragraph 303)	Table 3-2, row 7	Table 3-2, row 6	Table 3-2, rows 1-5	Table 3-2, rows 1-4
Survey Required ¹⁴	VGS	VGS (PA & APV) NVGS	NVGS ¹⁵	NVGS ¹⁶



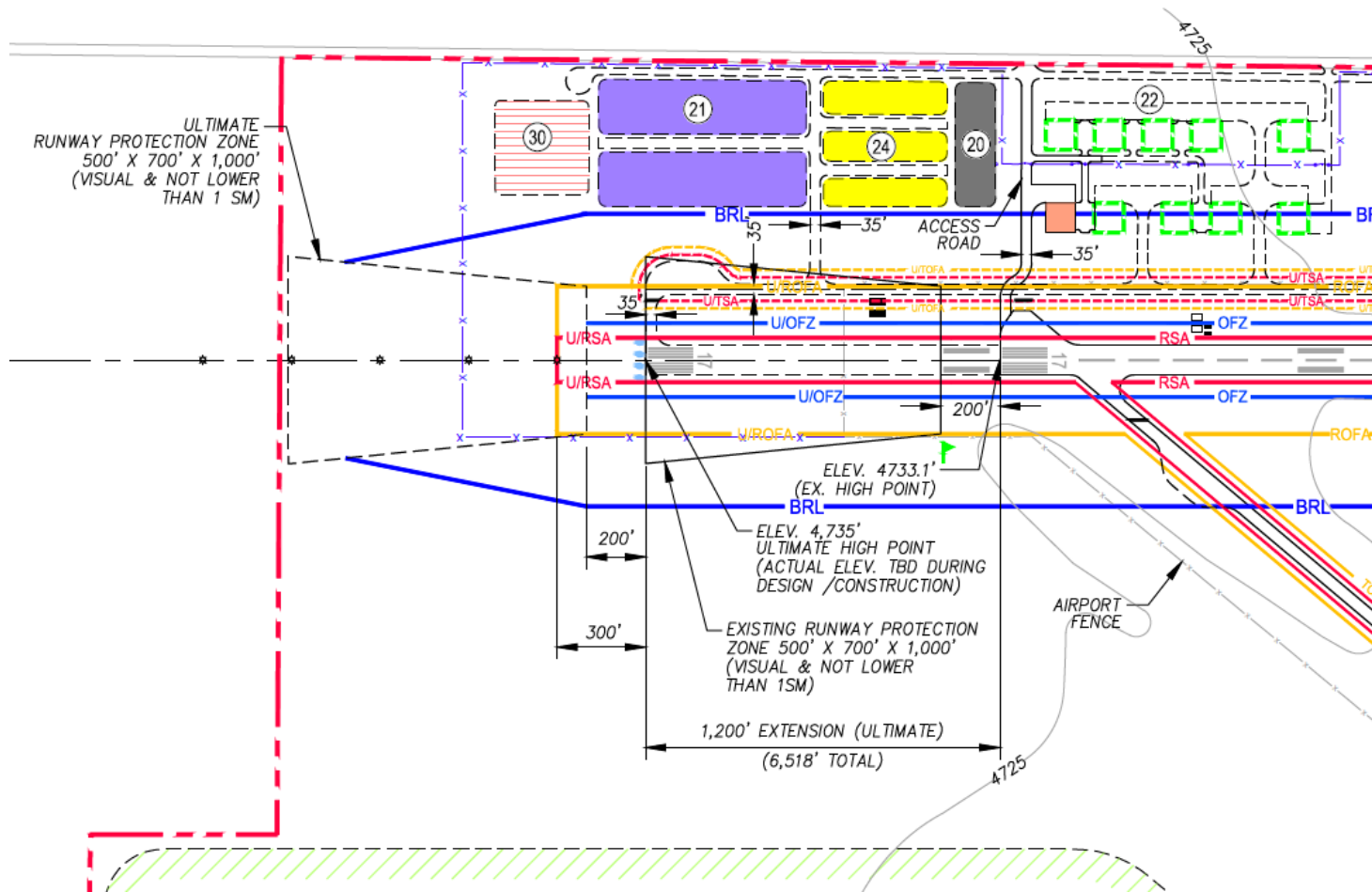
Runway 17-35



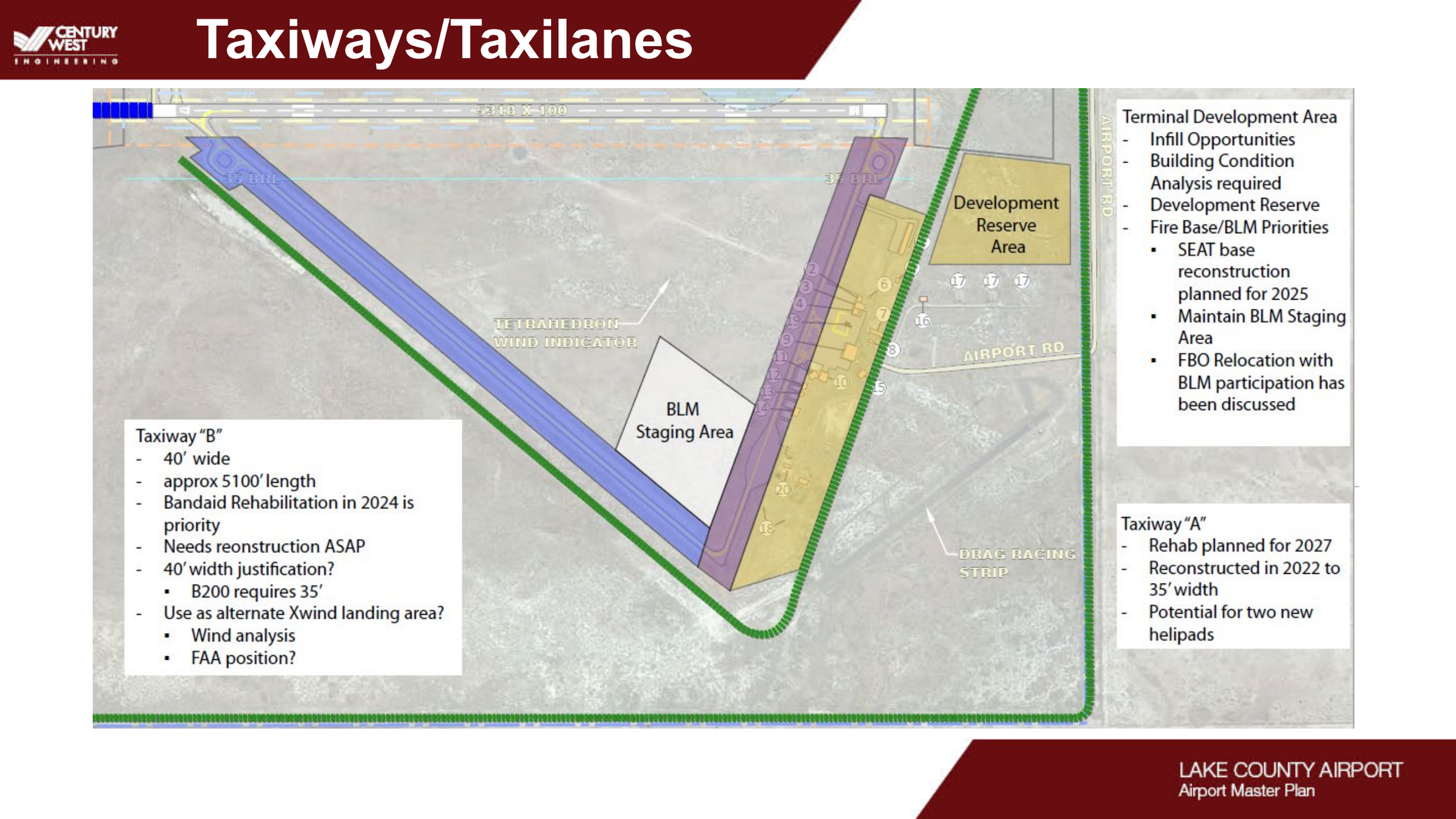
Runway 17-35

- 5,318' x 100'
- Non-precision markings
- S-74, D-86 pavement strength ratings listed in AFD
- 2013 AMP depicted 16,000 SWG
- Designed to 12,500 lb SWG

Runway Extension?



- Existing 5318' x 100'
 - 1200' extension planned in previous ALP
 - Is 6518' still required/justified?
 - Preliminary analysis suggests 5050' is justified length
- Is 100' width still justified?
- AT802 design aircraft suggest 75' width is justified
- FAA AC 150/5325-4B
Runway Length
Requirements for Airports
- Justification process
- FAA coordination
- What length do you think it ought to be?



Apron

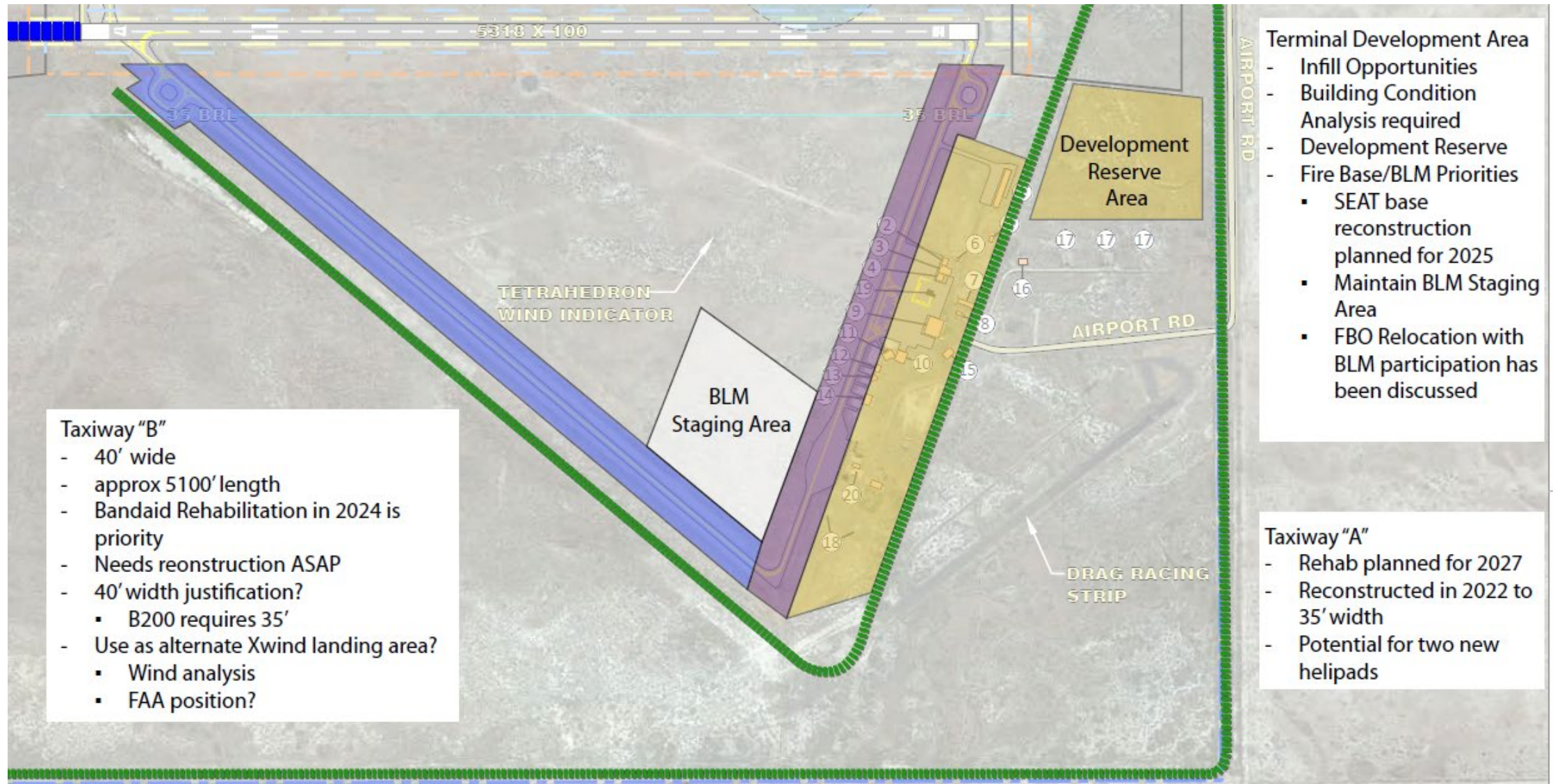
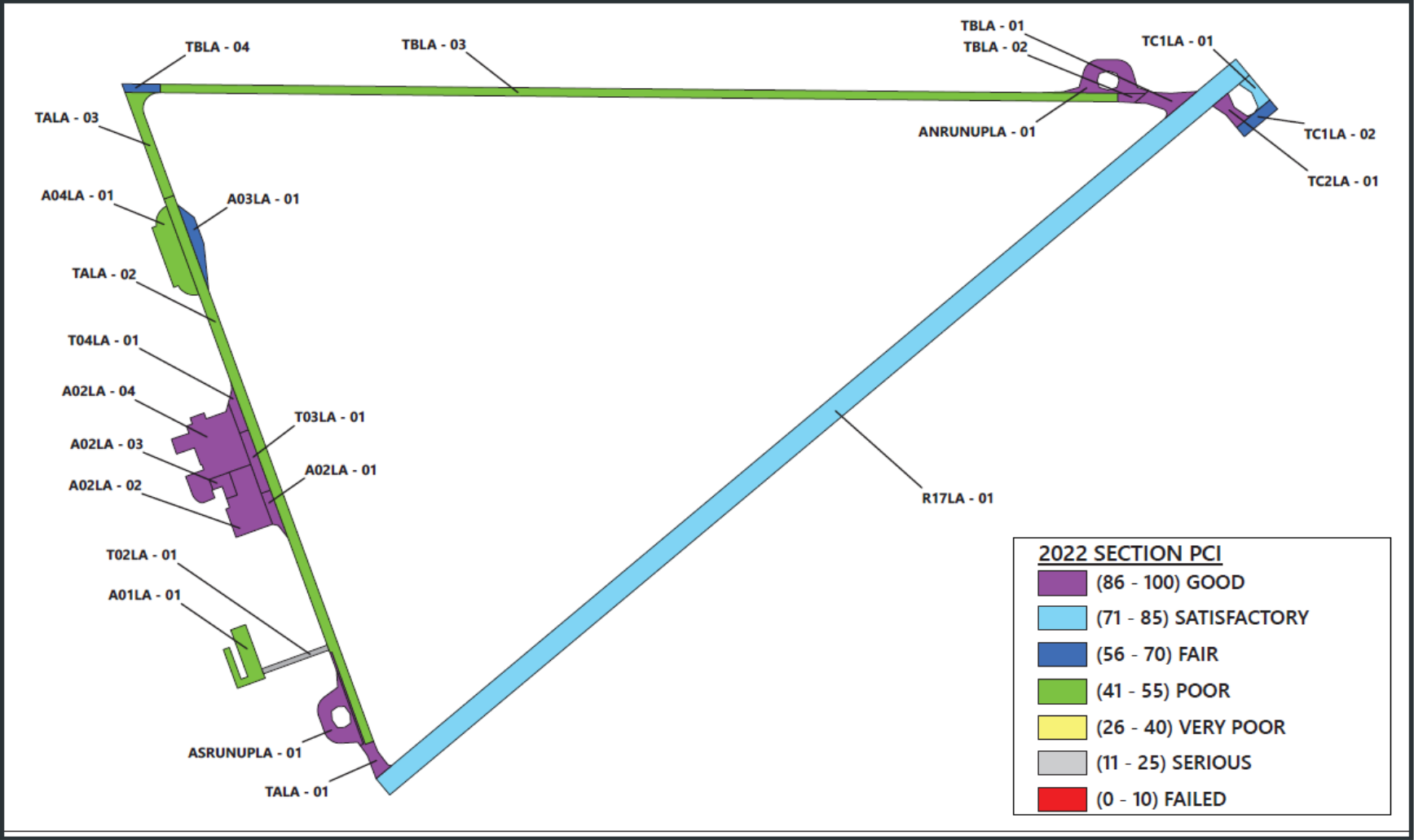


Figure 2-15: Pavement Conditions (2023 Inspection)



Source: 2022 ODA Pavement Evaluation Program



Support Facilities

- Airport Lighting
 - MIRL
 - Rotating Beacon
 - Taxiway Reflectors
- Weather Reporting
 - AWOS
- Aircraft Fuel
 - Provided by Lake County
 - 100LL in a 12,000 gallon tank
 - JetA in 8,000 gallon tank





Pilots Lounge





Hangars



Hangars



Hangars



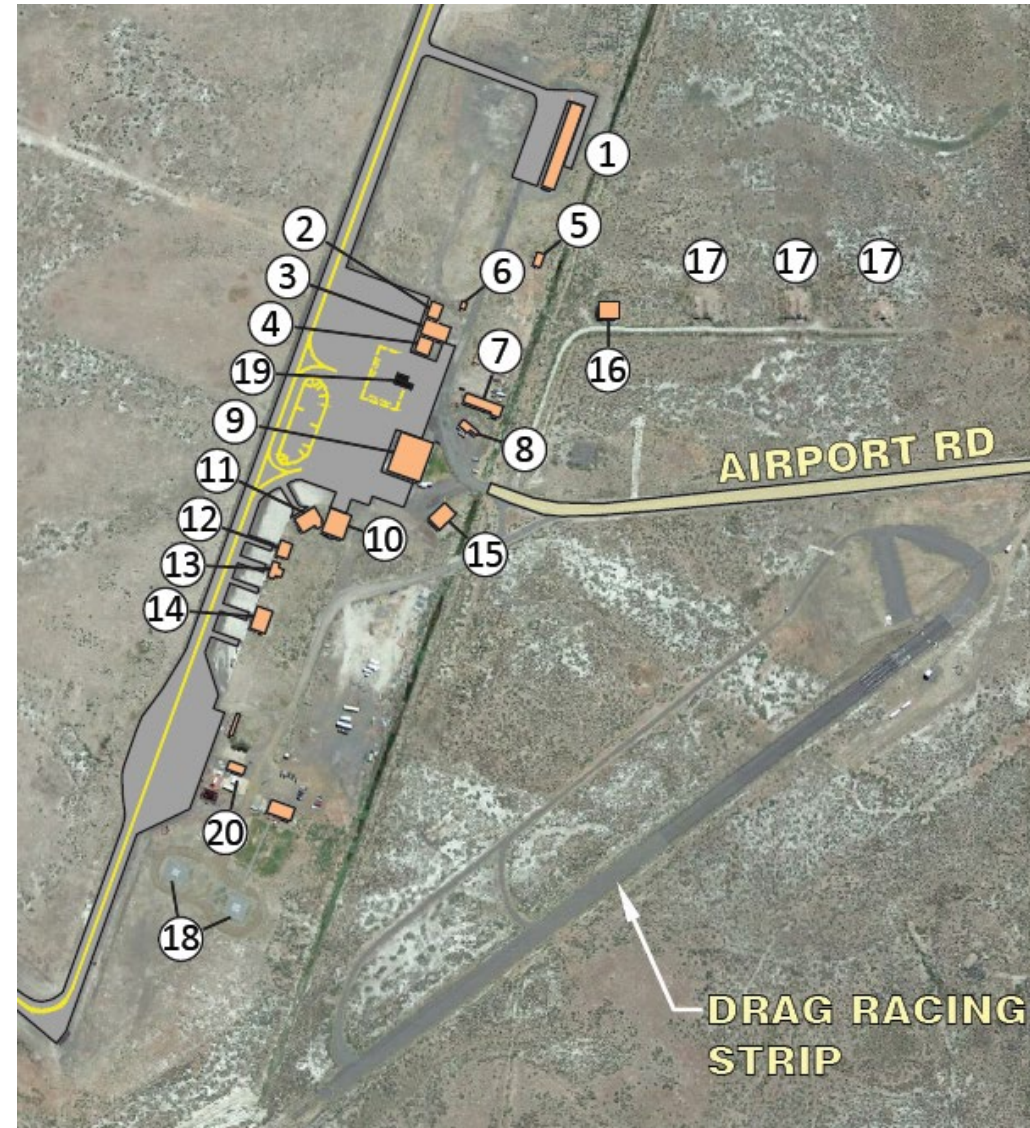


Hangars



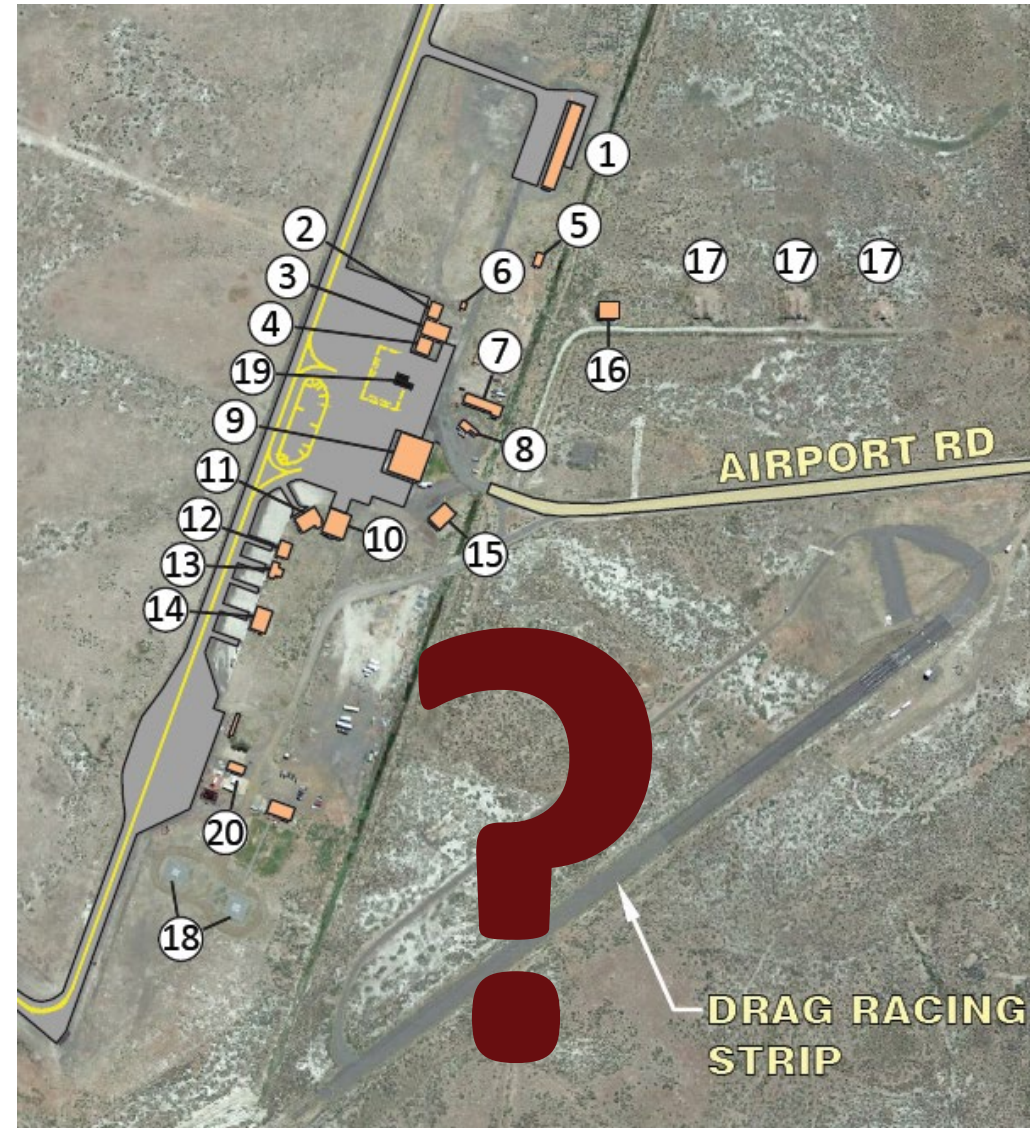
Building Condition

BUILDING LEGEND		
BUILDING #	USE	ELEVATION (AGL)
①	AIRCRAFT STORAGE	20'
② - ④	AIRCRAFT STORAGE	20'
⑤	WELL HOUSE	10'
⑥	ELECTRICAL	10'
⑦	STORAGE	10'
⑧	SECURITY	10'
⑨	FBO / MAINTENANCE	42'
⑩ - ⑭	AIRCRAFT STORAGE	14'-24'
⑮	STORAGE	10'
⑯	STORAGE	30'
⑰	UNUSED BUNKER	8'
⑱	HELIPAD	-
⑲	FUEL ISLAND	14' (SIGNAGE 30')
⑳	TANKER BASE	-



Building Condition

BUILDING LEGEND		
BUILDING #	USE	ELEVATION (AGL)
①	AIRCRAFT STORAGE	20'
② - ④	AIRCRAFT STORAGE	20'
⑤	WELL HOUSE	10'
⑥	ELECTRICAL	10'
⑦	STORAGE	10'
⑧	SECURITY	10'
⑨	FBO / MAINTENANCE	42'
⑩ - ⑭	AIRCRAFT STORAGE	14'-24'
⑮	STORAGE	10'
⑯	STORAGE	30'
⑰	UNUSED BUNKER	8'
⑱	HELIPAD	-
⑲	FUEL ISLAND	14' (SIGNAGE 30')
⑳	TANKER BASE	-



Other Facilities

Fencing

- Mix of 3 strand barbwire and 6' perimeter fencing
- Any requirements for future fencing?

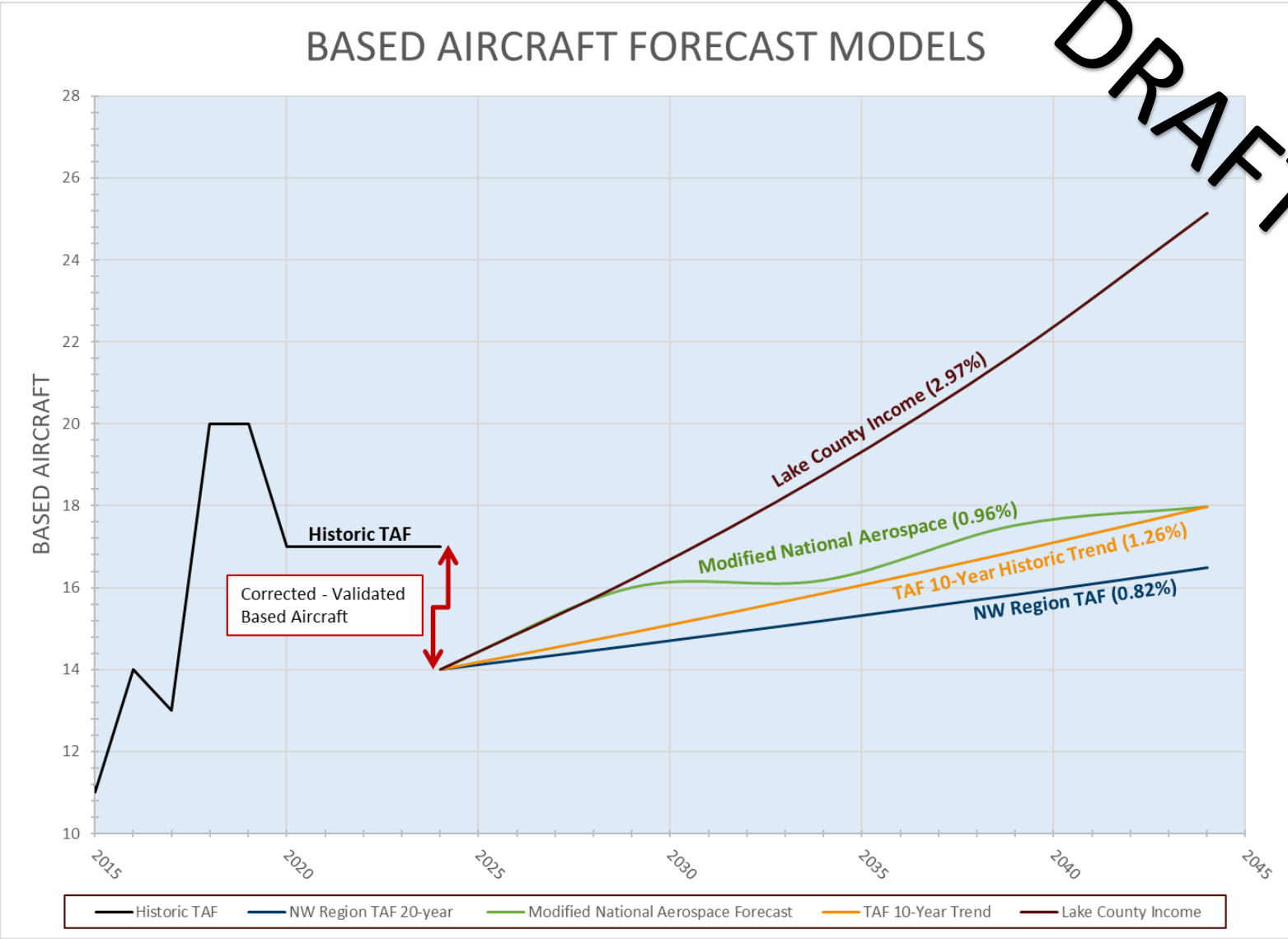
Vehicle Parking

- Unmarked spaces for several vehicles near FBO
- Hangar owners likely park adjacent to or inside hangar when aircraft in use
- Does the PAC have any specific concerns with current vehicle parking?

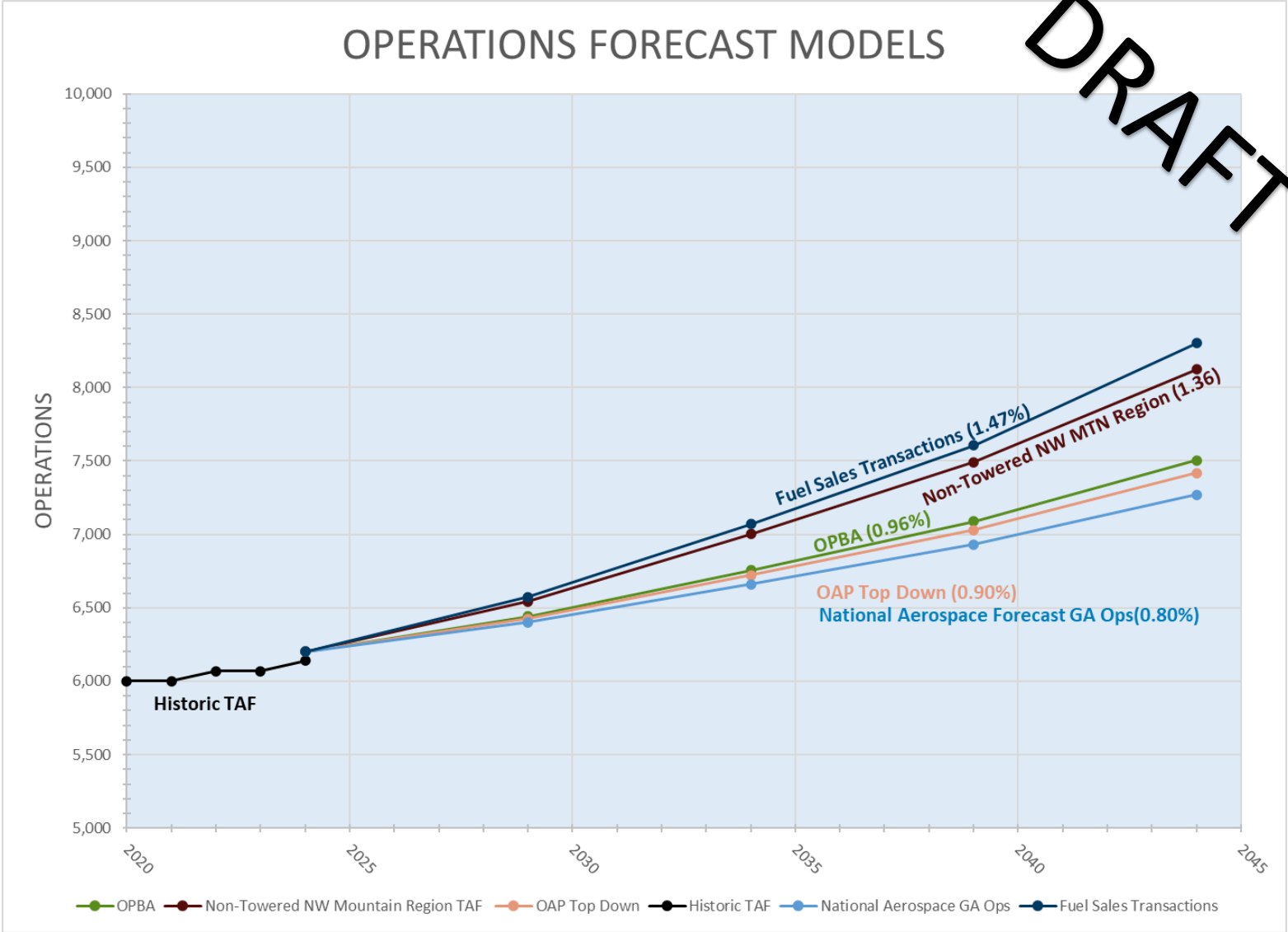
Utilities

- Electrical,

What about the future?



Aviation Activity Forecasts



Design Aircraft:

- 2013 AMP – King Air 200 or PC-12
 - 54' -6" Wingspan – MTOW 12,500 lbs
 - 98 knot Approach Speed (V_{ref})
- 2023 Design Aircraft – AT 802
 - 59' Wingspan – MTOW 16,000 lbs
 - 103 knot Approach Speed (V_{ref})

A-II, B-II (small)
12,500 lbs. or less



Super King Air 200
Pilatus PC-12
DCH Twin Otter
Cessna Caravan

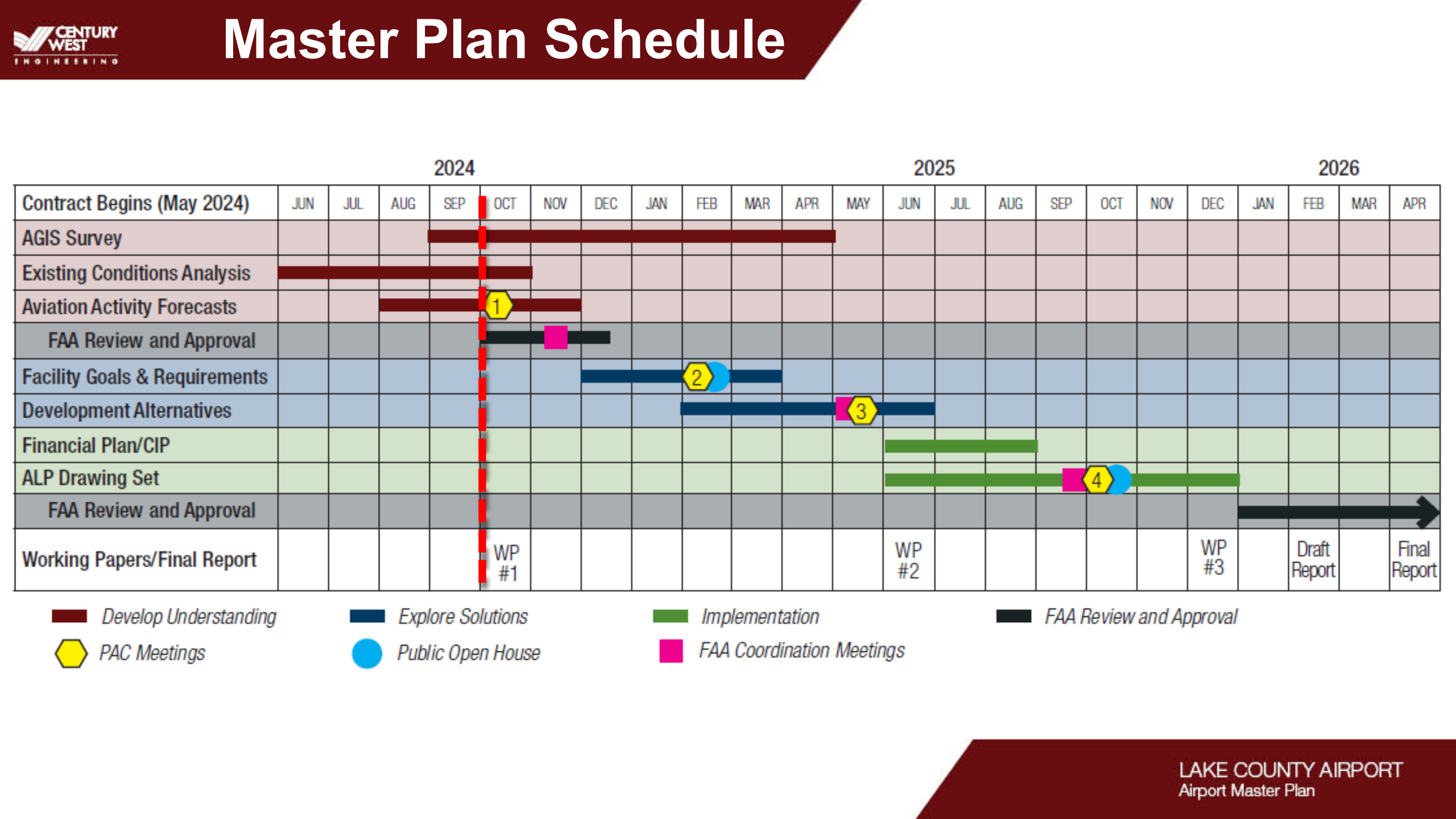
B-II
Greater than 12,500 lbs.



Super King Air 300, 350
Beech 1900
AT 802
Falcon 20, 50

Next Steps

- Complete Working Paper #1
 - Introduction
 - Existing Conditions Analysis
 - Aviation Activity Forecasts
- Submit for FAA Review
 - Coordinate FAA Approval of Forecasts and Airport Reference Code
- Facility Goals and Requirements
- Development Alternatives



Thank you... Questions?

Mike Dane – Mdane@centurywest.com